## General Description

These P-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

BVDSS	RDSON	ID
-30V	40mΩ	-5A

Features

- *-30V,-5A, RDS(ON) =40mΩ @VGS =10V*
- *Improved dv/dt capability*
- *Fast switching*
- *Green Device Available*

SOT89 Pin Configuration
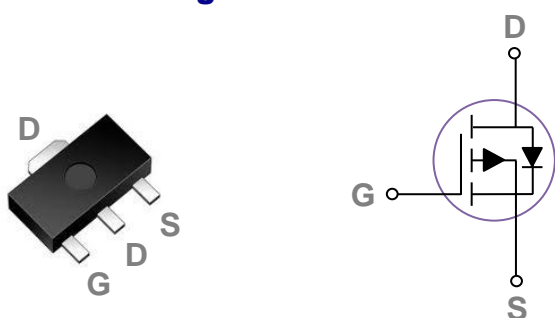
Applications

- *MB / VGA / Vcore*
- *Load Switch*
- *Hand-Held Instrument*

Absolute Maximum Ratings Tc=25℃ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current – Continuous (T_A=25℃)	-5	A
	Drain Current – Continuous (T_A=70℃)	-3.2	A
I_{DM}	Drain Current – Pulsed[1]	-16	A
P_D	Power Dissipation (T_A=25℃)	1.6	W
	Power Dissipation – Derate above 25℃	0.013	W/℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 125	℃

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{θJA}$	Thermal Resistance Junction to Ambient	---	80	℃/W

Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=-250uA	-30	---	---	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-30V , V_{GS}=0V , T_J=25℃	---	---	-1	uA
		V_{DS}=-24V , V_{GS}=0V , T_J=125℃	---	---	-10	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA

On Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=-10V , I_D=-3A	---	40	55	mΩ
		V_{GS}=-4.5V , I_D=-2.5A	---	55	90	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250uA	-1.0	-1.6	-2.5	V
gfs	Forward Transconductance	V_{DS}=-10V , I_D=-3A	---	4	---	S

Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q_g	Total Gate Charge[2],[3]	V_{DS}=-15V , V_{GS}=-4.5V , I_D=-2A	---	5.1	---	nC
Q_{gs}	Gate-Source Charge[2],[3]		---	2	---	
Q_{gd}	Gate-Drain Charge[2],[3]		---	2.2	---	
$T_{d(on)}$	Turn-On Delay Time[2],[3]	V_{DD}=-15V , V_{GS}=-10V , R_G=6Ω I_D=-2A	---	3.4	---	ns
T_r	Rise Time[2],[3]		---	10.8	---	
$T_{d(off)}$	Turn-Off Delay Time[2],[3]		---	26.9	---	
T_f	Fall Time[2],[3]		---	6.9	---	
C_{iss}	Input Capacitance	V_{DS}=-15V , V_{GS}=0V , F=1MHz	---	560	---	pF
C_{oss}	Output Capacitance		---	55	---	
C_{rss}	Reverse Transfer Capacitance		---	40	---	

Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	-5	A
I_{SM}	Pulsed Source Current		---	---	-10	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=-1A , T_J=25℃	---	---	-1.2	V

Note :
1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.
3. Essentially independent of operating temperature.
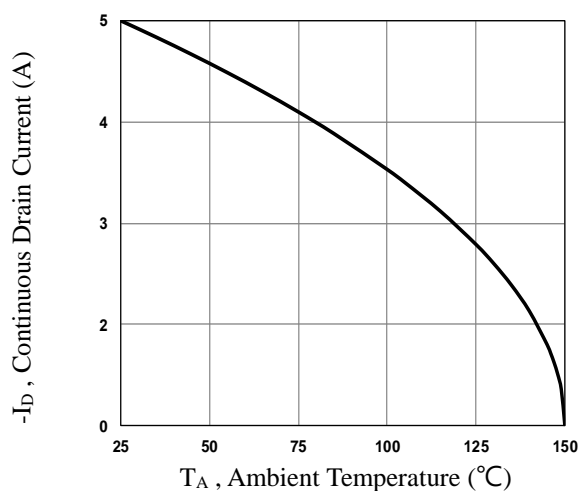
Fig.1   Continuous Drain Current vs. T_A
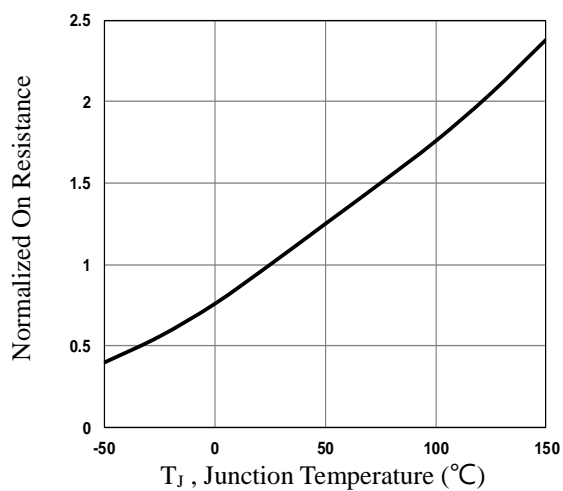
Fig.2   Normalized RDSON vs. T_J
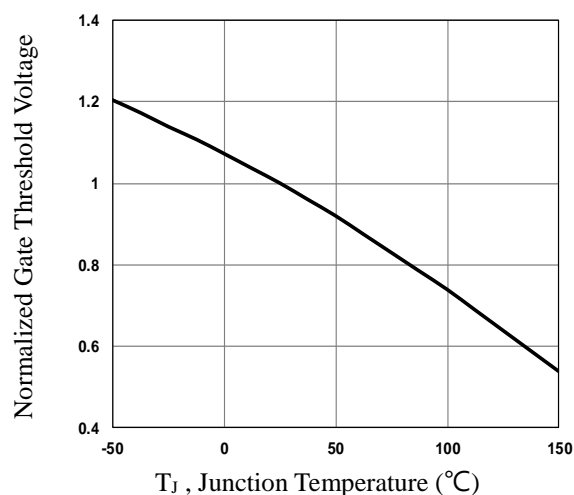
Fig.3   Normalized V_th vs. T_J
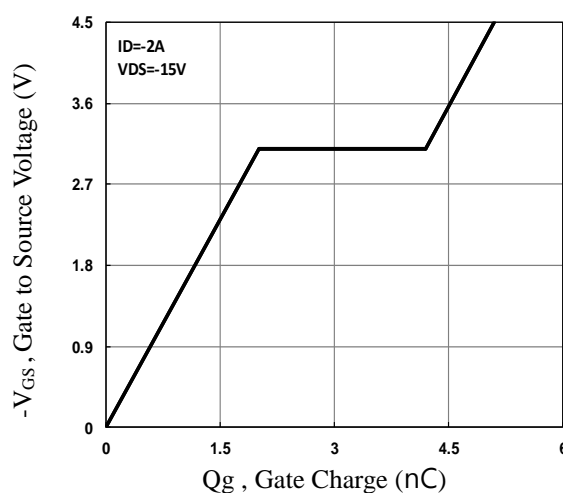
Fig.4   Gate Charge Waveform
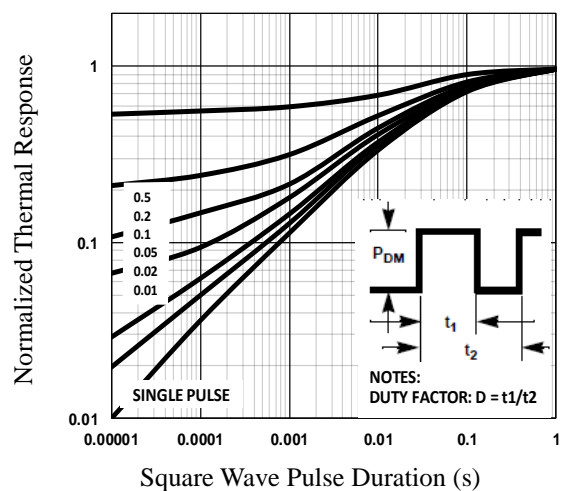
Fig.5   Normalized Transient Impedance
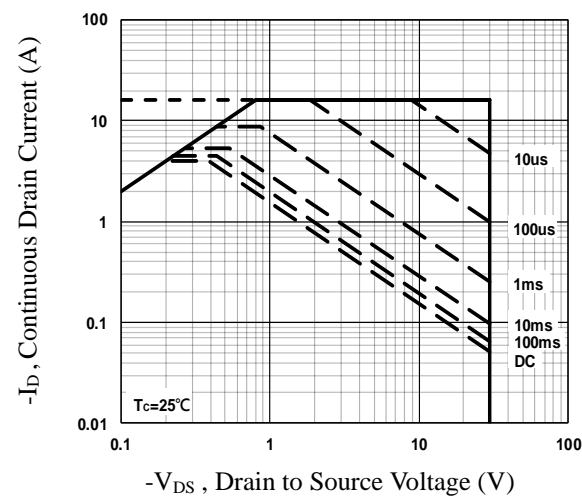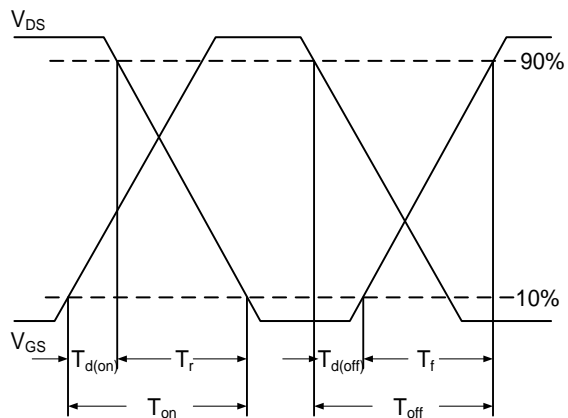

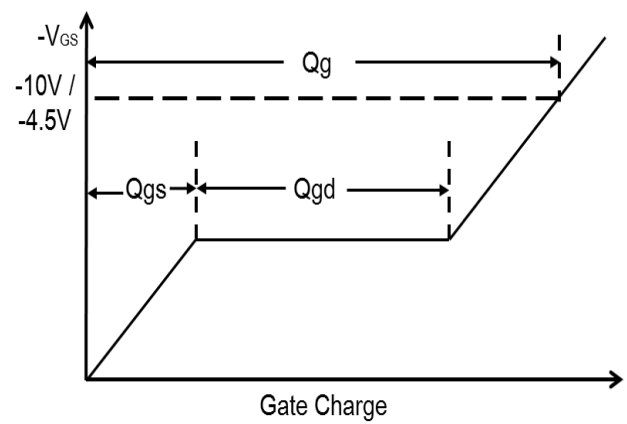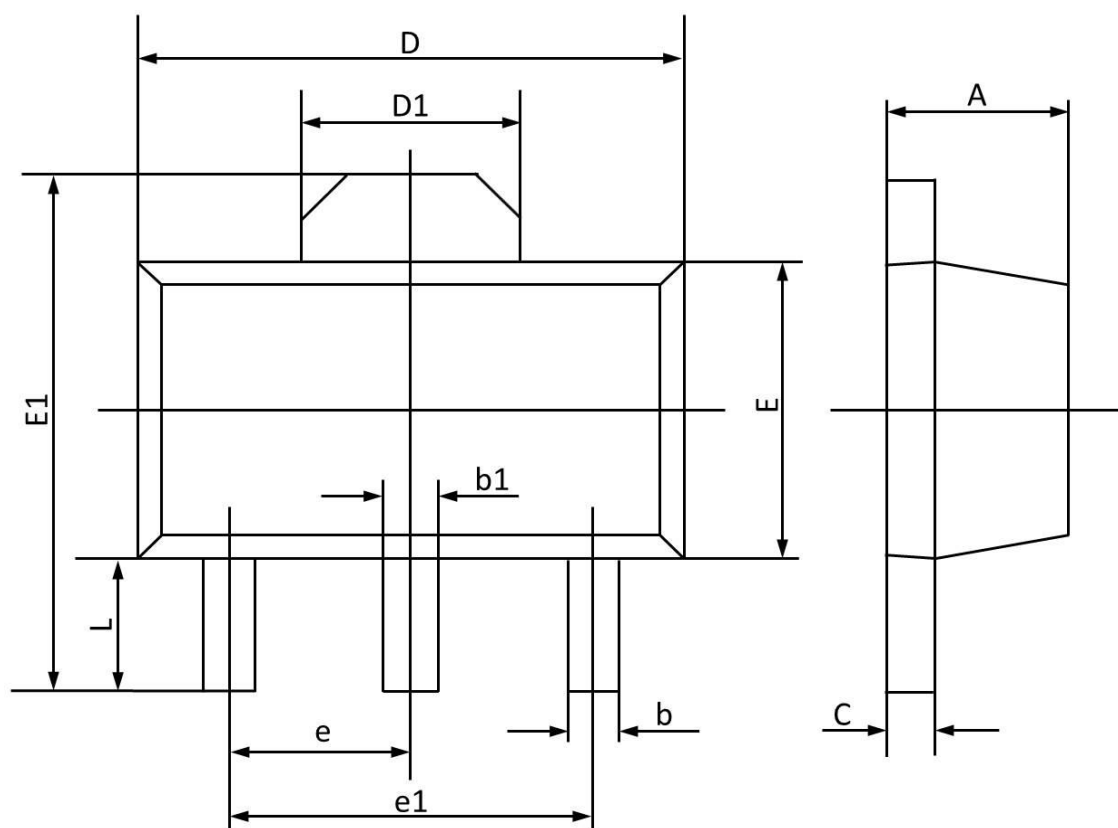**Fig.6   Maximum Safe Operation Area**

Fig.7　Switching Time Waveform

Fig.8　Gate Charge Waveform

SOT89 PACKAGE INFORMATION

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF		0.061 REF	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP		0.118 TYP	
L	0.900	1.200	0.035	0.047

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